

System and process for enhancing method calls of special purpose object-oriented programming languages to have security attributes for access control

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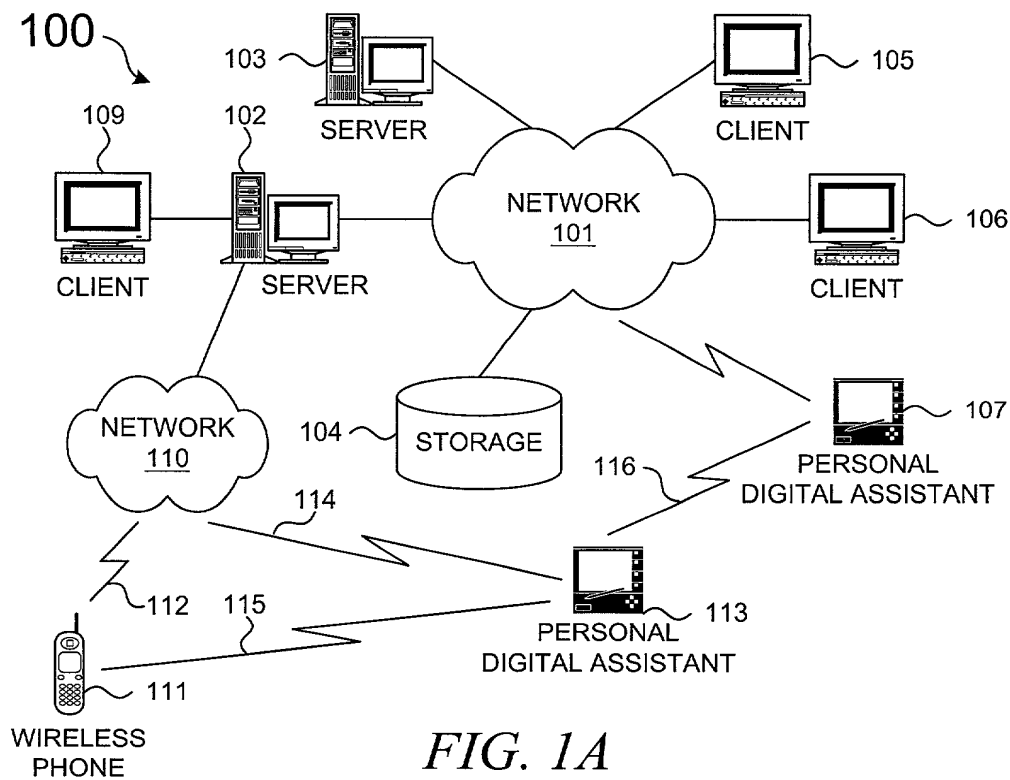


FIG. 1A
(PRIOR ART)

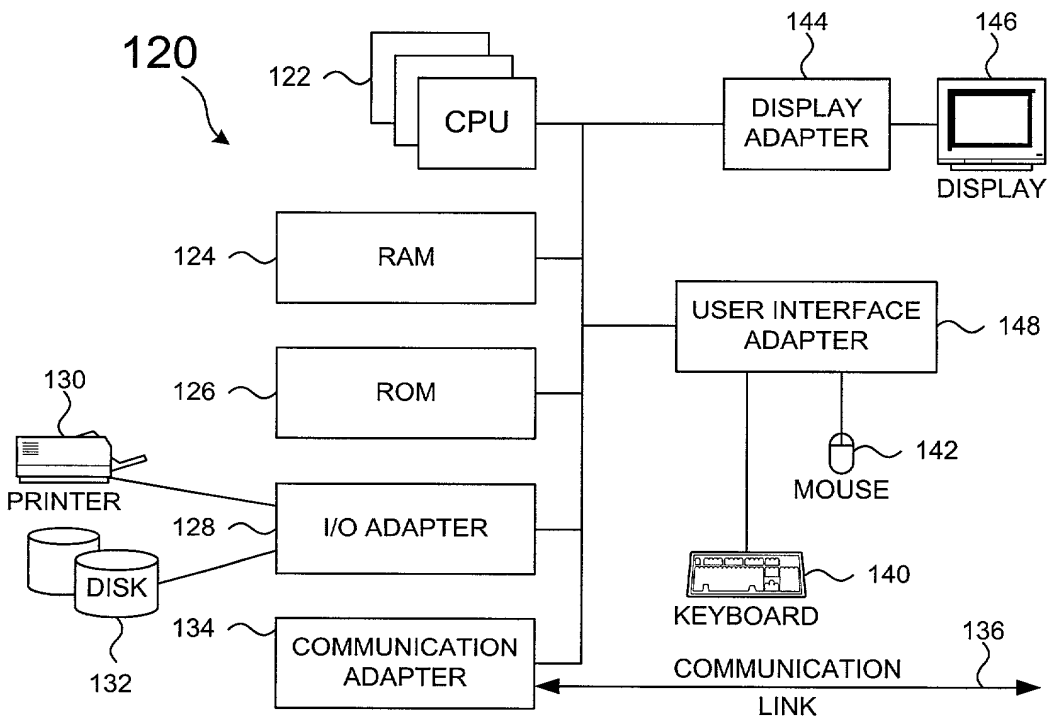
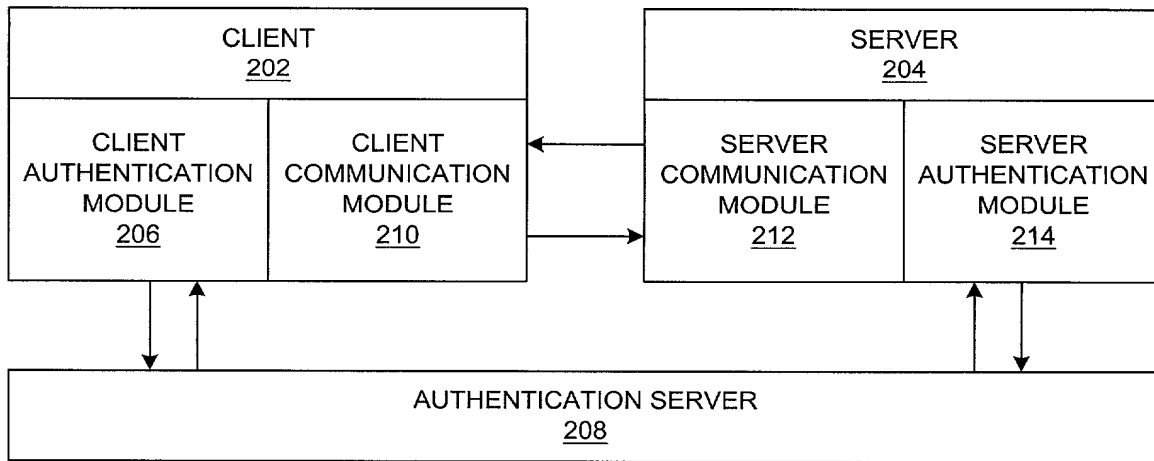


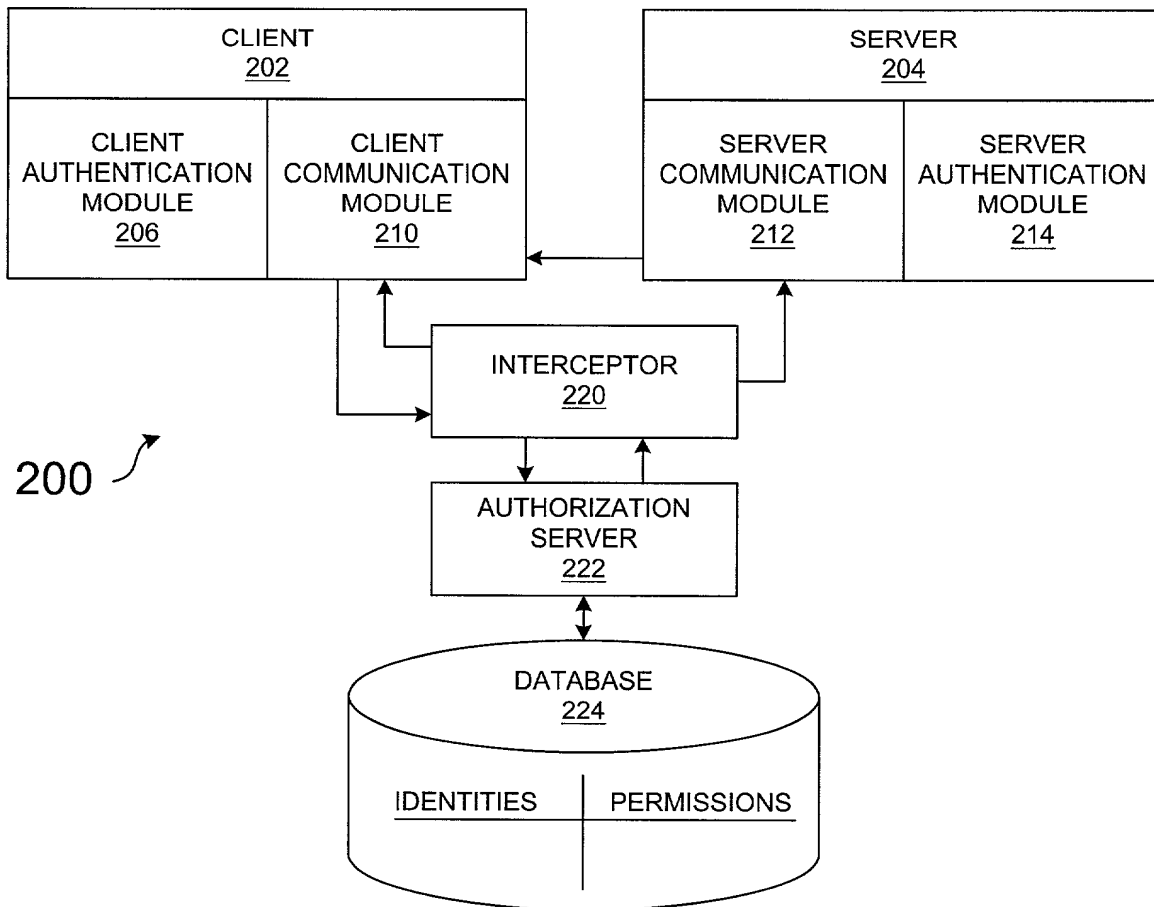
FIG. 1B
(PRIOR ART)

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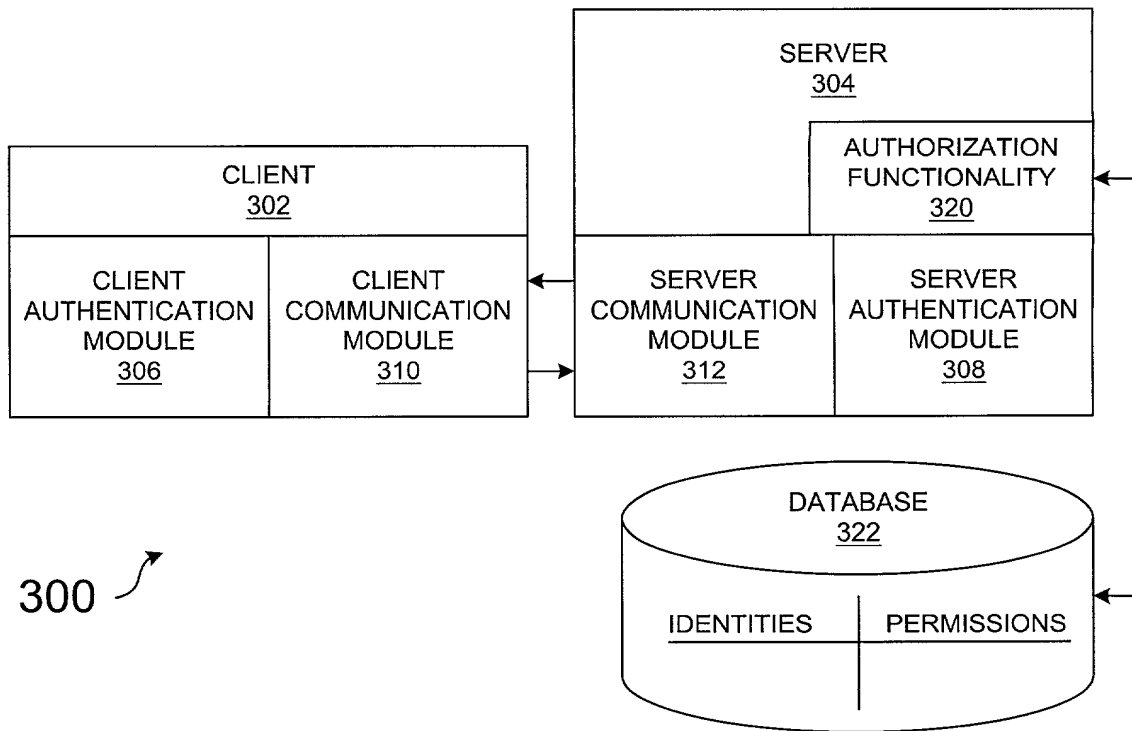
FIG. 2A
(PRIOR ART)

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FIG. 2B
(PRIOR ART)

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*FIG. 3*

System and process for enhancing method calls of special purpose object-oriented
programming languages to have security attributes for access control

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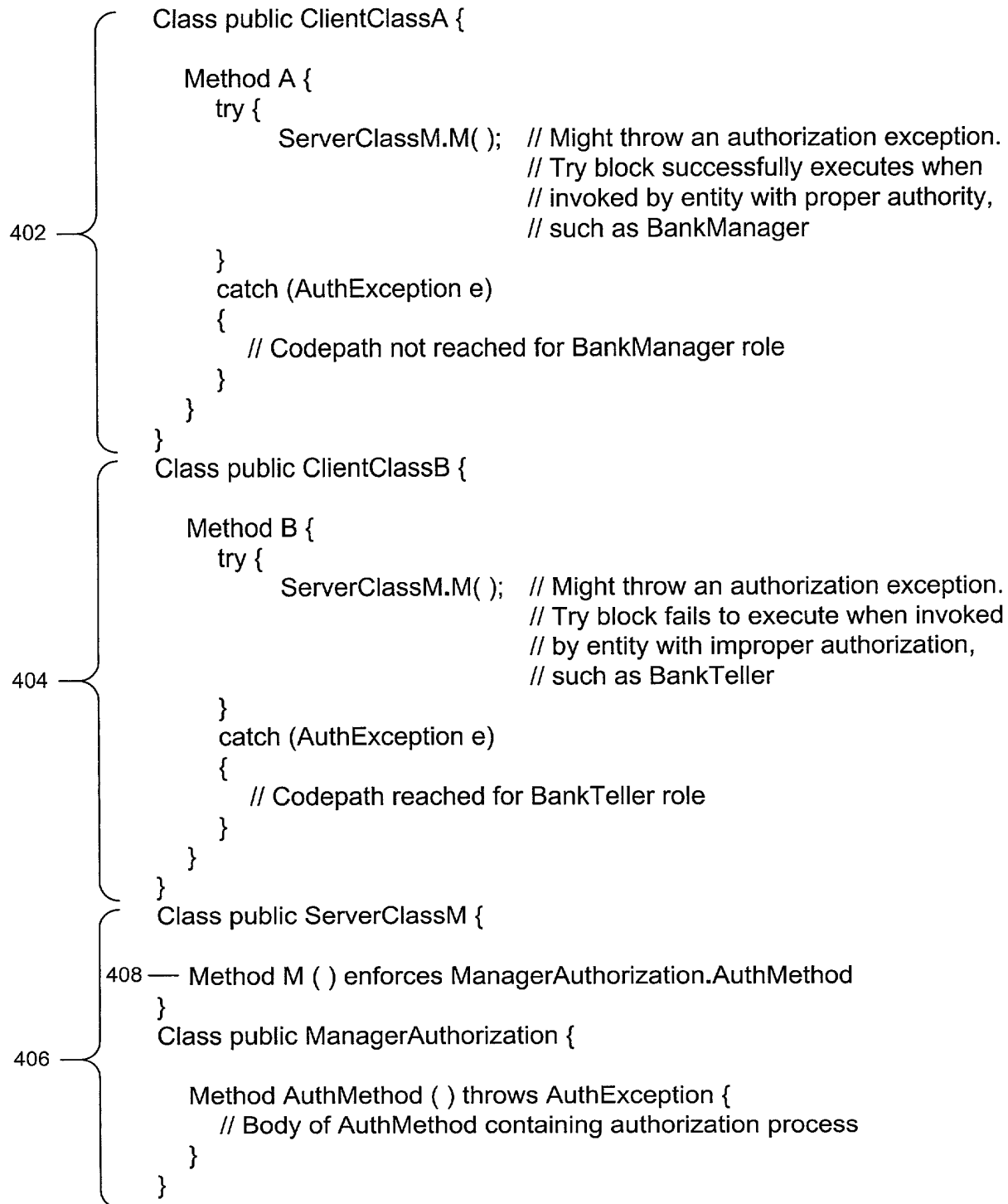


FIG. 4A

System and process for enhancing method calls of special purpose object-oriented
programming languages to have security attributes for access control

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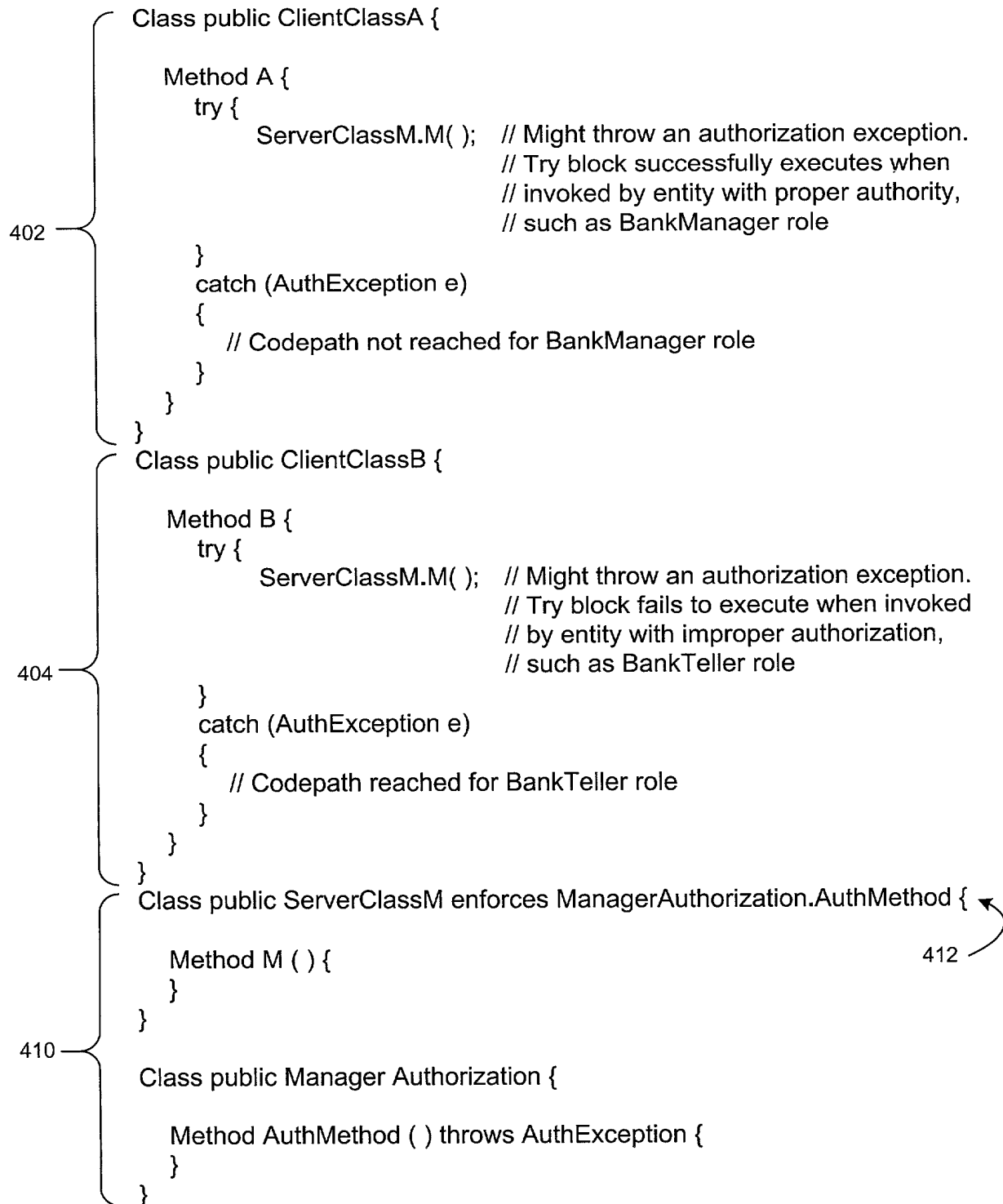


FIG. 4B

System and process for enhancing method calls of special purpose object-oriented programming languages to have security attributes for access control

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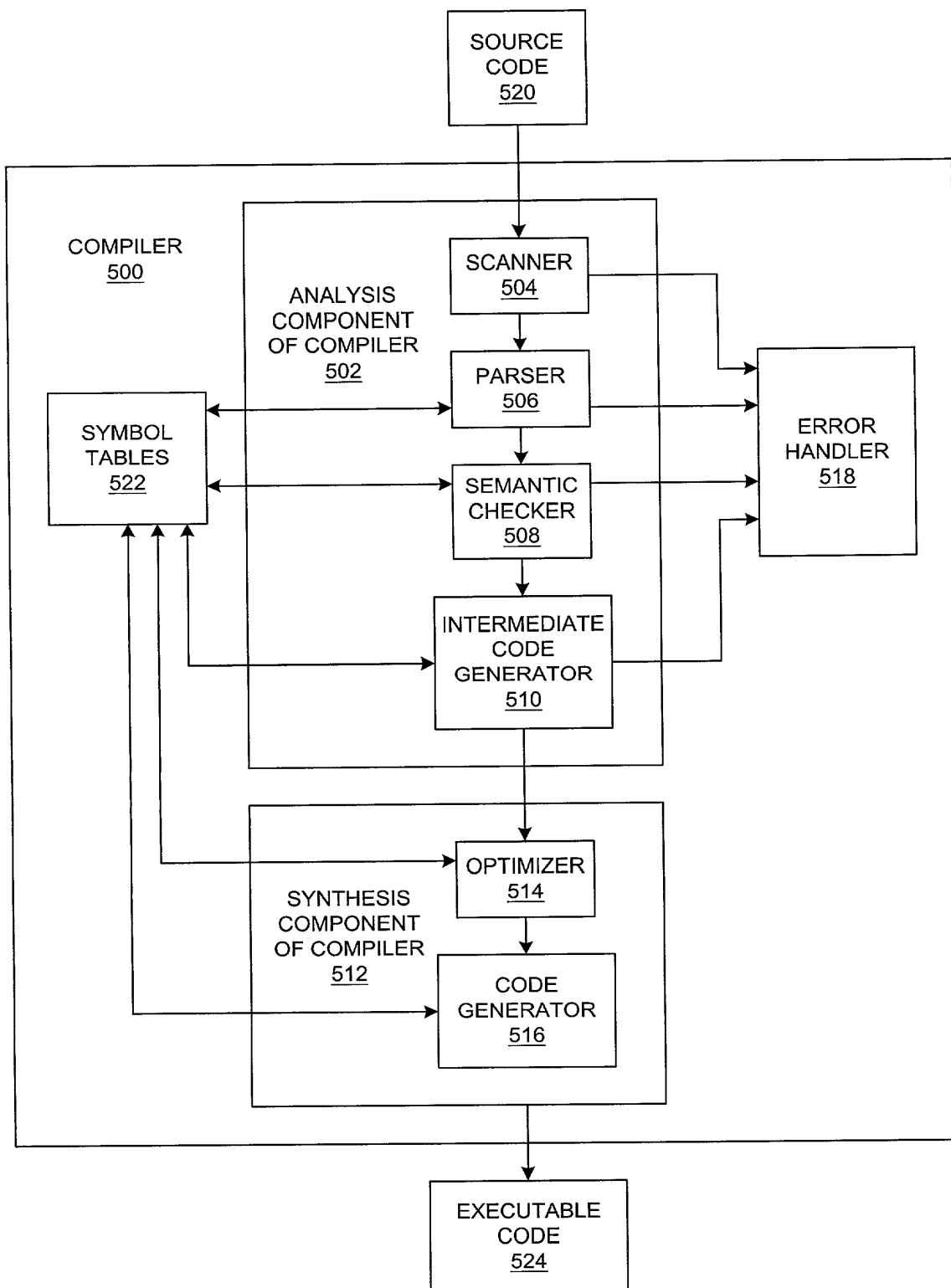


FIG. 5
(PRIOR ART)

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dec → classdec

classdec → **class** class_id **extends** class_id { { class_field } }

classdec → **class** class_id **extends** class_id **enforces** authMethod { { class_field } }

class_field → vardec

class_field → method

602

method → **method** id(tyfields) **enforces** authMethod — 608

method → **method** id(tyfields) = exp

authMethod → **method** id(tyfields) = exp — 604

method → **method** id(tyfields):type_id = exp

authMethod → **method** id(tyfields):type_id = exp — 606

exp → **new** class_id

exp → lvalue id()

exp → lvalue id(exp {, exp})

FIG. 6

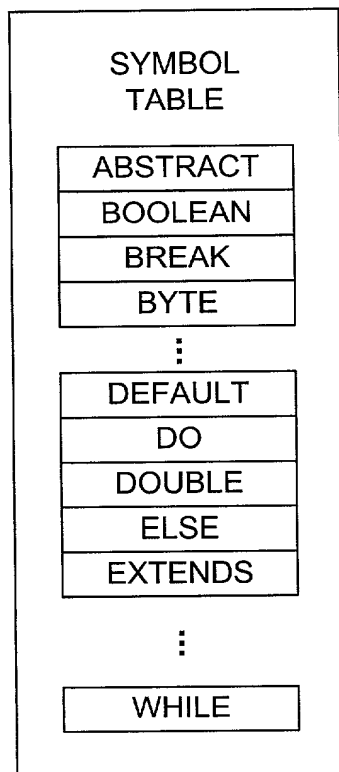


FIG. 7A

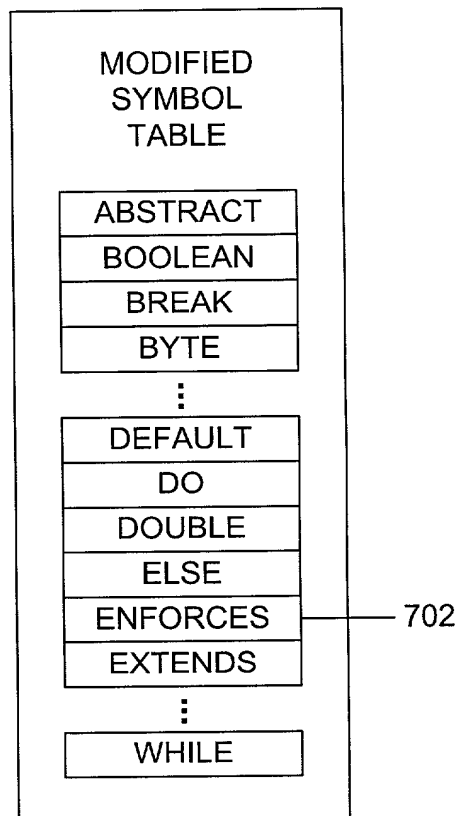


FIG. 7B

System and process for enhancing method calls of special purpose object-oriented programming languages to have security attributes for access control

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802 — class CC extends Object {

```

    method A ( ) = { SC:M ( ) }
}

```

804 — class SC extends Object enforces ACLClass:R {

```

    method M ( ) = { body of M }
    method F ( ) = { body of F }
}

```

806 — class SC extends Object {

```

    method M ( ) enforces ACLClass:R = { body of M }
    method F ( ) = { body of F }
}

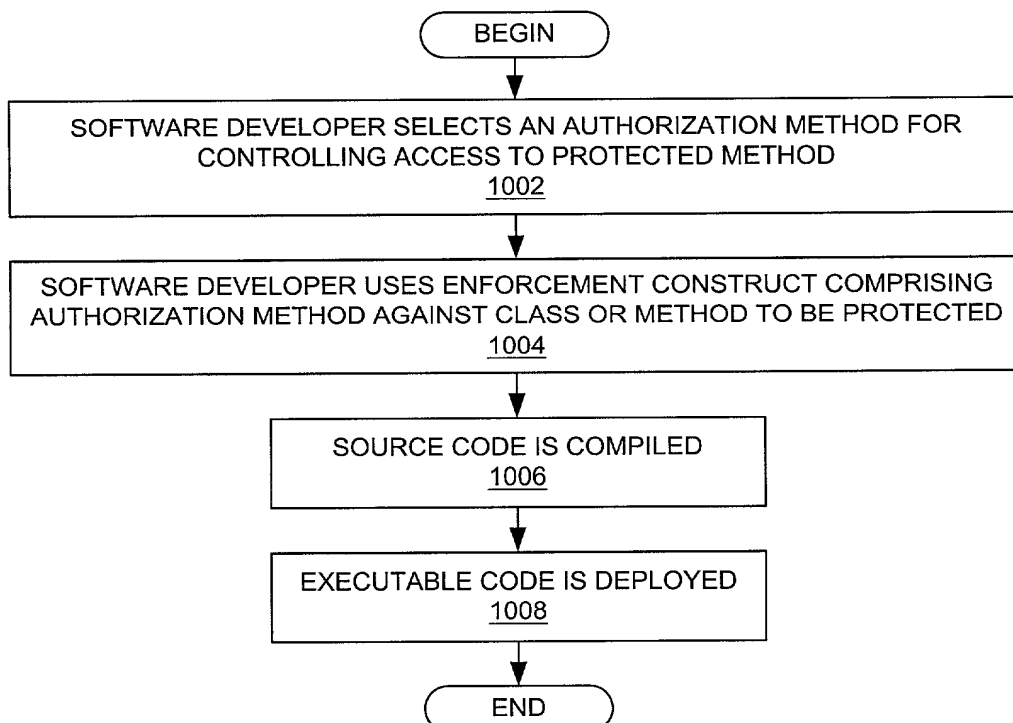
```

808 — class SCSC extends SC {

```

    method M ( ) = { body of M }
}

```

FIG. 8*FIG. 10A*

System and process for enhancing method calls of special purpose object-oriented
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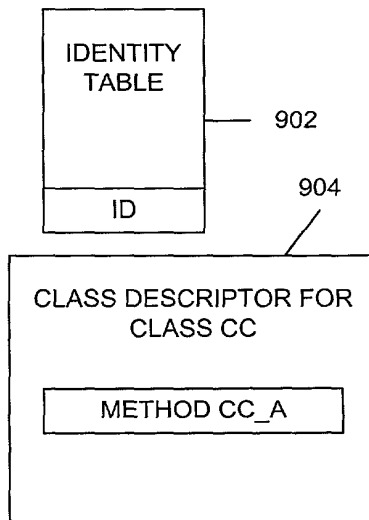


FIG. 9A

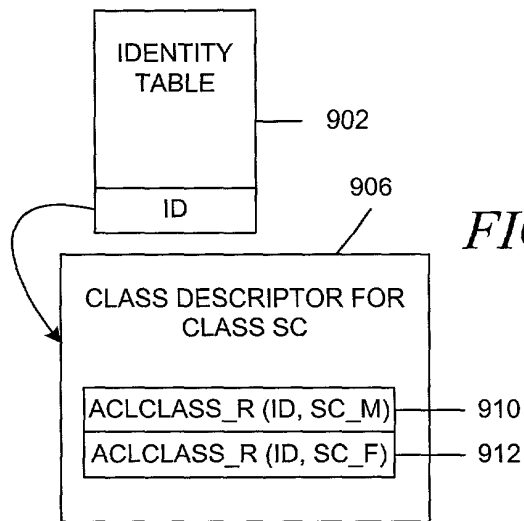


FIG. 9B

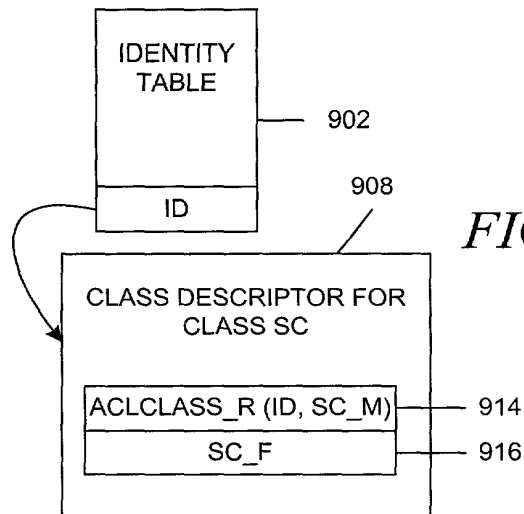


FIG. 9C

System and process for enhancing method calls of special purpose object-oriented
programming languages to have security attributes for access control

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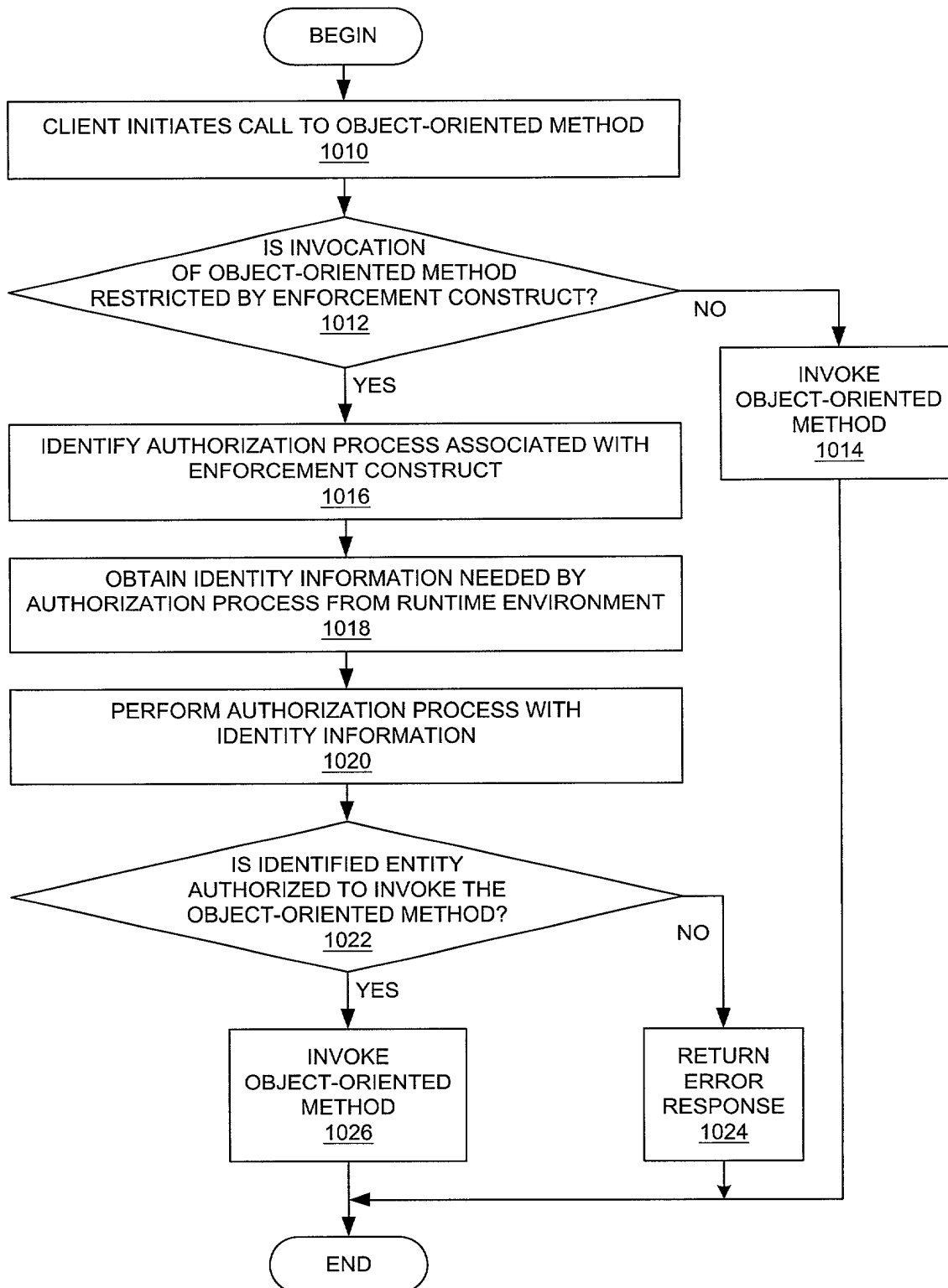


FIG. 10B